



# TS93 EMR T/PT/TDE



Surface applied door closer

Installation instructions:

Pull side track mount door closer with smoke detector (EMR T)

Push side track mount door closer with smoke detector (EMR PT)

Double egress track mount door closer with smoke detector (EMR TDE)

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## Technical specifications

### Templates

### Contents

**NOTE:** Refer to the included drawings for push side door closer, back plate mounting templating.

**NOTE:** Refer to the included drawings for pull side door closer, back plate mounting templating.

**NOTE:** Refer to the included drawings for double egress door closer, back plate mounting templating.

### Note

1. Drawing is not to scale.
2. Dimensions are in inches/[mm].
3. Hand door – see image note.
4. Caution: sex nuts are required for attachment of components to unreinforced doors and to wood or plastic faced composite type fire doors, unless an alternative method is identified in the individual door manufacturer's listings.
5. Template is for 4-1/2 x 4-1/2 butt hinges & 3/4" offset pivots
6. Maximum door opening degree is:  
T = 145°; PT = 110°; TDE = 130°.
7. Minimum door width is: T = 33"; PT = 32"; TDE = 36".
8. Hold open range with optional hold open kit is:  
T = 80°-105°; PT = 80°-95°; TDE = 80°-115°.
9. The appropriate closer body styles are:  
T = "B" style; PT = "G" style; TDE = "B" style.
10. Arrows on closer mounting plate point upward.

## Size selection charts

### TS93 EMR T

		Door Width					
Closer	Interior/ Exterior	2'-9" min.	3'-0" max.	3'-6" max.	4'-0" max.	4'-6" max.	5'-0" max.
TS9315 EMR T	Interior	•	•	•	•	N/A	N/A
TS9356 EMR T	Interior	N/A	N/A	N/A	•	•	•

### TS93 EMR PT

		Door Width					
Closer	Interior/ Exterior	2'-8" min.	3'-0" max.	3'-6" max.	4'-0" max.	4'-6" max.	5'-0" max.
TS9315 EMR PT	Interior	•	•	•	•	N/A	N/A
TS9356 EMR PT	Interior	N/A	N/A	N/A	•	•	•

### TS93 EMR TDE

		Door Width				
Closer	Interior/ Exterior	3'-0" min.	3'-6" max.	4'-0" max.	4'-6" max.	5'-0" max.
TS9315 EMR TDE	Interior	•	•	•	N/A	N/A
TS9356 EMR TDE	Interior	N/A	N/A	•	•	•

## Electrical specifications

### Electrical connection

Apart from the broad range of **DORMA** accessories, other manufacturers offer various activators, locking devices, safety sensors and additional accessories that are compatible with **TS93 EMF** closers.

### External activation device minimum requirements

In general external activation devices need to provide a normally closed alarm contact.

### Contact ratings

Operating voltage with power supply via operator:

- 24 V DC + 10% -15%
- 24VAC +10% -15%

Maximum input current:

- 24VDC 166mA
- 24VAC 166mA

Dry contact, normally open devices (such as push buttons or overhead sensors):

### Minimum requirements

Operating voltage with power supply via operator:

- 24 V DC +/- 10%

Operating voltage with external power supply:

- max. 48 V AC/DC

Current load for relay contact of locking device:

- max. 1 A

Power supply:

- 115 V AC +/- 10%
- 50/60 Hz
- max 6.6 A

Rated for continuous duty: electric strike:

- min. 30%

Rated for continuous duty: motor lock:

- 100 %

Power consumption for accessories:

- The operator will provide a maximum of 1.5 A at 24 V DC for external accessories. Any additional power will require an external power supply in order to avoid malfunctions.

### Override Activation Inputs

**Note:** These inputs bypass the mode switch and are always active.

Dry contact, normally closed devices (frequently used to control systems with smoke and heat evacuation or building management systems):

- Use input terminals 53 and 3 and set parameter "d2" to 1. Wet output devices with 8 to 24 volts (such as telephone/intercom systems):
- Use input terminals 57 and 57a.

# TS93 EMR T/PT/TDE

## Closer setup

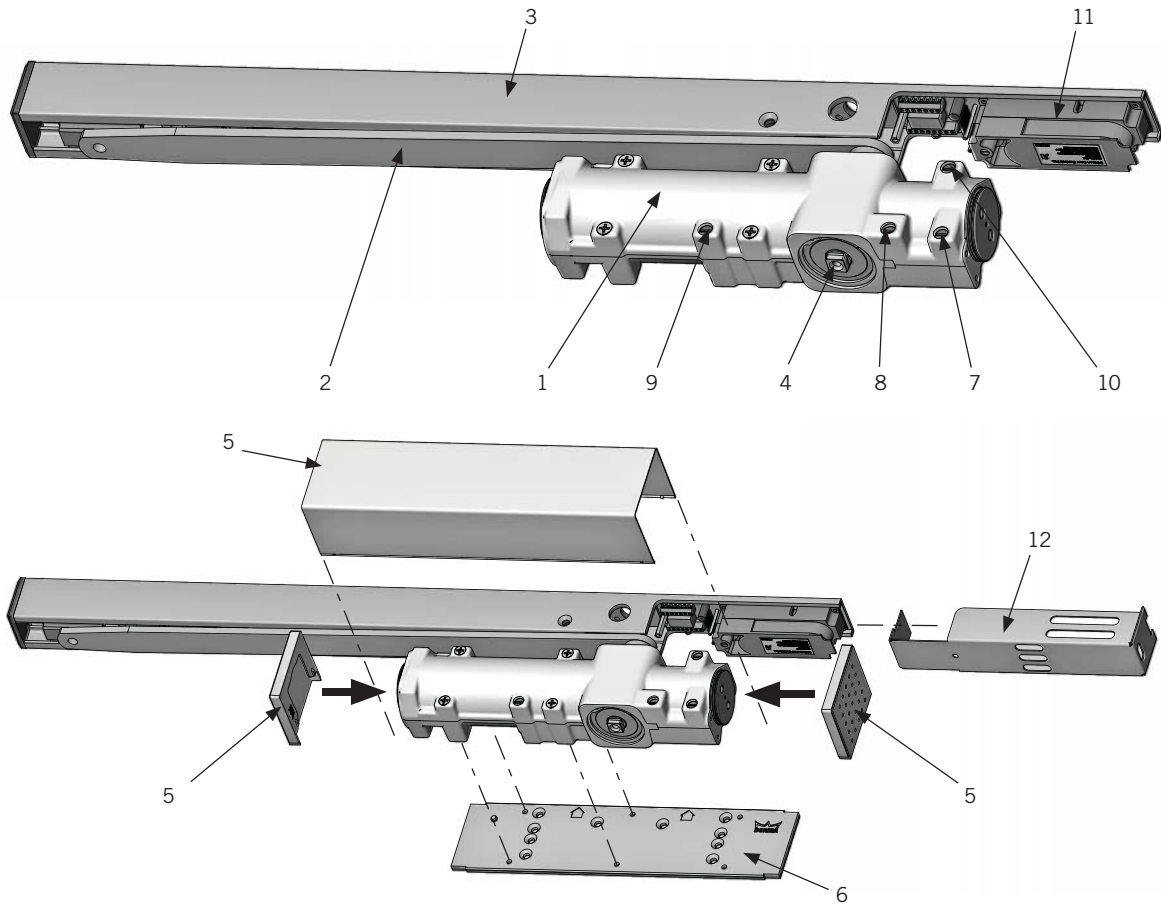
- ⚠ Follow included template to properly prepare door and frame for all accessories of the closer installation.

⚠ Know the swing of the door which is being installed prior to installation.
- ⚠ Verify closer spring size prior to installation. See "Size selection chart" on page 3.

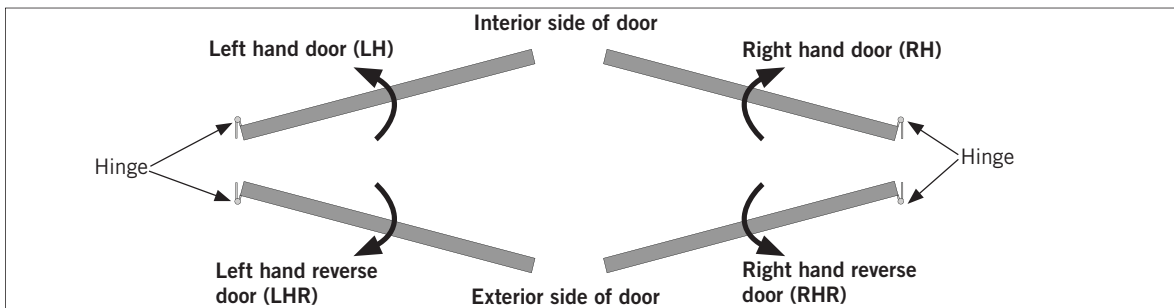
⚠ Make sure door efficiently operates prior to installing closer.

The surface closer is comprised of the following components.

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Closer body</li> <li>2. Main arm</li> <li>3. Track assembly</li> <li>4. Pinion</li> <li>5. Cover and end caps</li> <li>6. Back plate</li> </ol> | <ol style="list-style-type: none"> <li>7. Closing/sweep speed adjustment</li> <li>8. Latch speed adjustment</li> <li>9. Backcheck adjustment</li> <li>10. Delayed action adjustment</li> <li>11. Smoke detector</li> <li>12. Detector cover</li> </ol> |
|---|--|



## Handing of the door

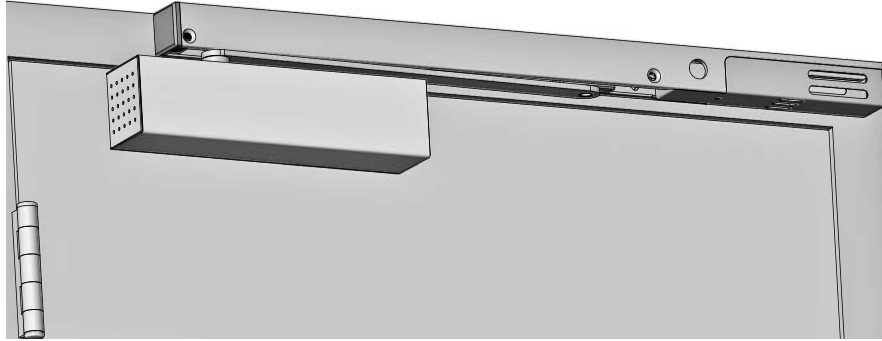


# TS93 EMR T/PT/TDE

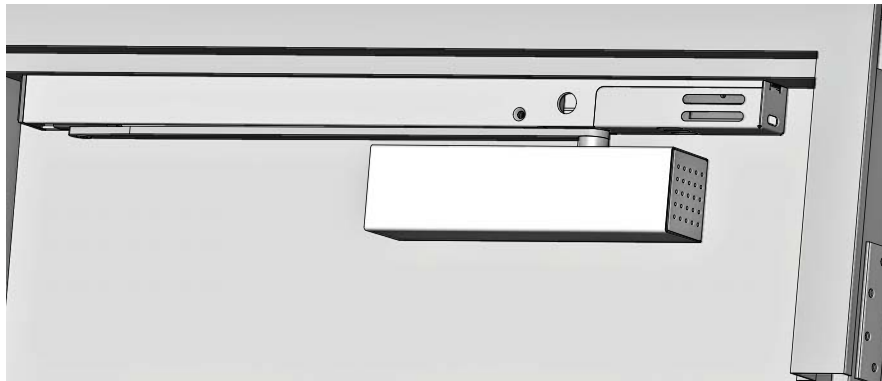
## Surface closer configurations

The surface can be assembled in the following configurations.

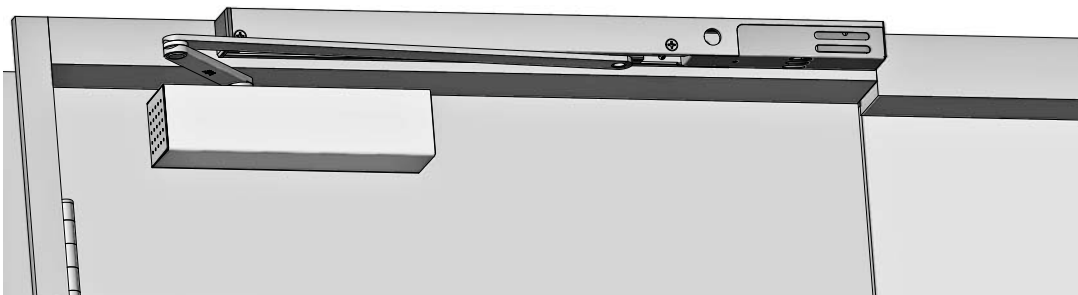
- a. Pull side mount configuration (T): Closer body style "B" [left hand reverse door]



- b. Push side mount configuration (PT): Closer body style "G" [right hand door]



- c. Double egress mount configuration (TDE): Closer body style "B" [left hand reverse door]

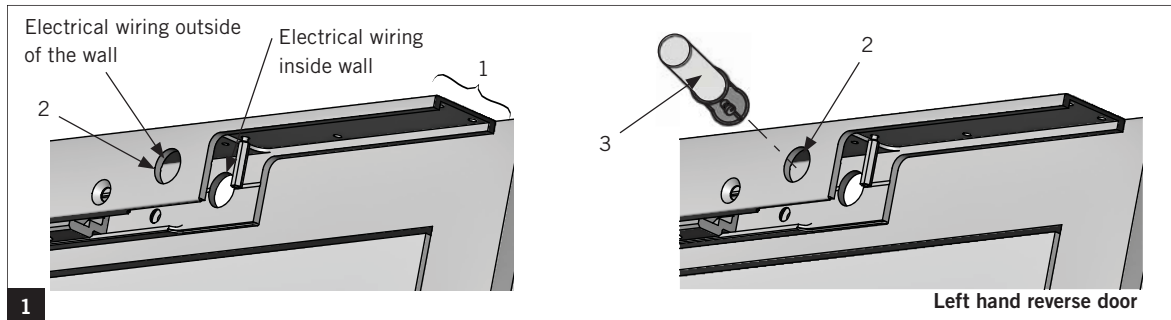


## A. Installing the surface closer: Pull side mount (T)

### Tools recommended

- Drill Bits
  - Metal: No. 21 & 10-32 Tap
  - Wood: 9/64"
- #0 Phillips screwdriver
- #2 Phillips screwdriver
- 3/16" flat head screwdriver
- Jeweler's flat head screwdriver
- M5 Hex key

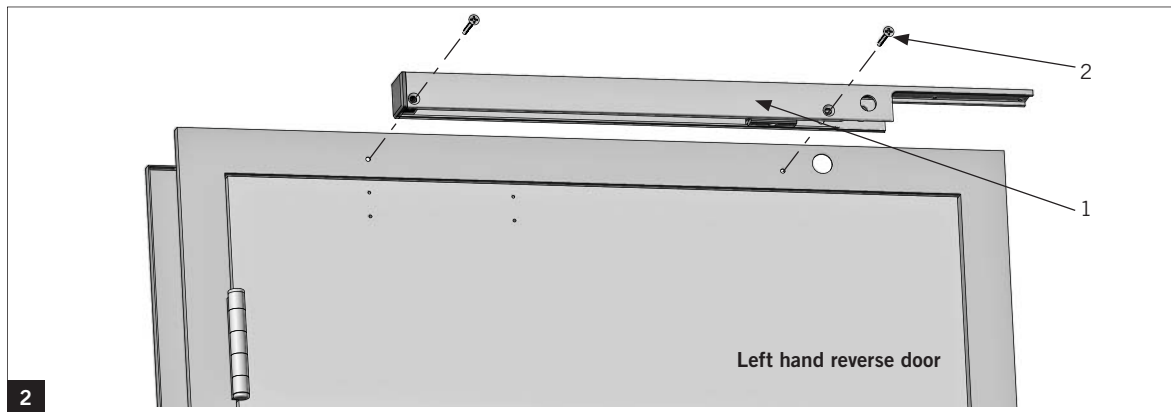
### Installing the track, detector, and backplate



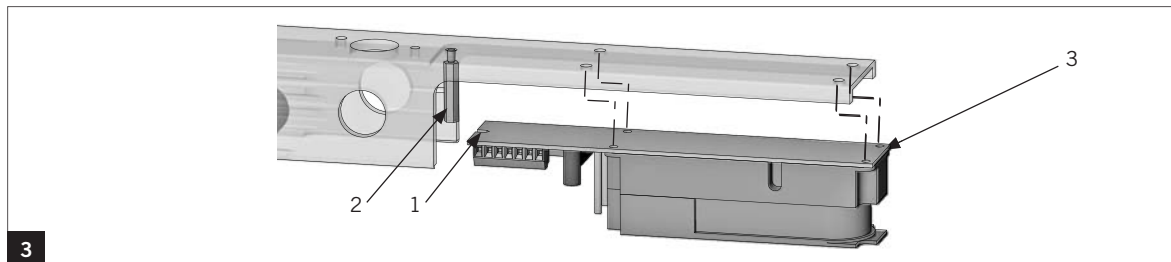
### Reference template 08279512

**NOTE:** For use on regular mount applications on the pull side of the door.

- 1.1 Orient the detector portion of the track (1) away from the hinge (see step 2 image for orientation).
- 1.2 Remove the appropriate wire access plug (2) from the track.
- 1.3 For wiring applications that are outside of the wall, screw a surface conduit (3) into the exterior wire plug hole.



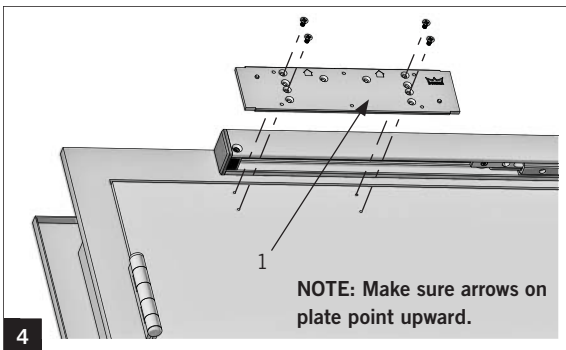
- 2.1 Attach the track channel (1) to the frame through the end blocks with two provided screws [1/4-20x2" Phillips flathead screws or No. 14x2-3/4" Phillips flathead screws] (2).



- 3.1 Slide the front indent of the detector (1) under the standoff (2), then attach the detector to the track with four screws [4-40x3/16" Phillips pan head screws] (3).

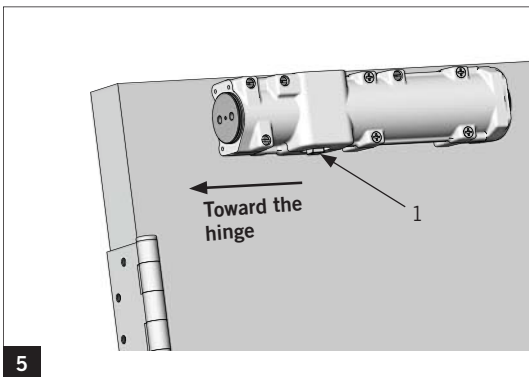
**Note:** If construction is still being completed near the detector installation, **DO NOT** install the detector at this time or protect the detector from construction dust contaminants.

# TS93 EMR T/PT/TDE

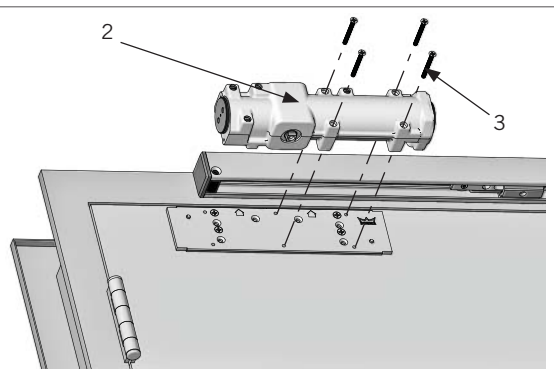


- 4.1** Attach the back plate (1) to the mounting surface using the four screws [10-32x5/8" Phillips flathead screws or #10x1" wood screws] provided with the surface closer, using the 1<sup>st</sup> and 3<sup>rd</sup> holes of the plate.

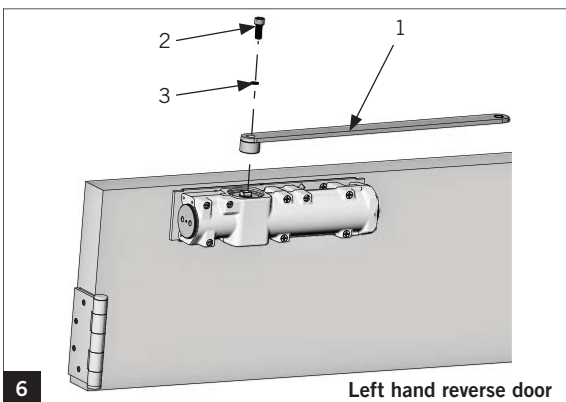
## Installing the surface closer



- 5** **NOTE:** Orient pinion (1) closest to hinge.

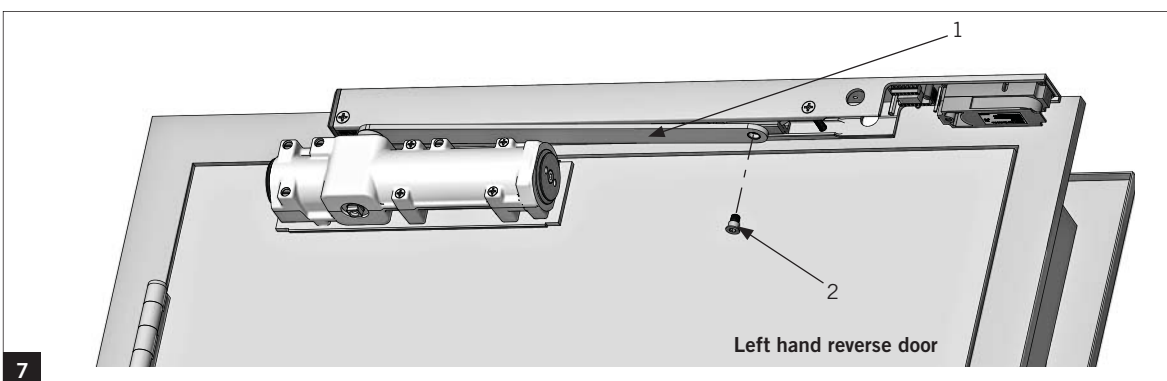


- 5.1** Attach the closer body (2) to the plate using the four screws [M5x47mm Phillips flathead] (3) provided with the plate itself.



- 6.1** Attach the main arm (1) to the top pinion with an M6x20 socket head cap screw (2) and an M8 lock washer (3) using an M5 hex key.

**⚠** Be sure the main arm is parallel to the door during application.



- 7.1** Align the arm (1) with the slide shoe of the track channel. **7.2** Attach with one shoulder bolt (2) using an M5 hex key.

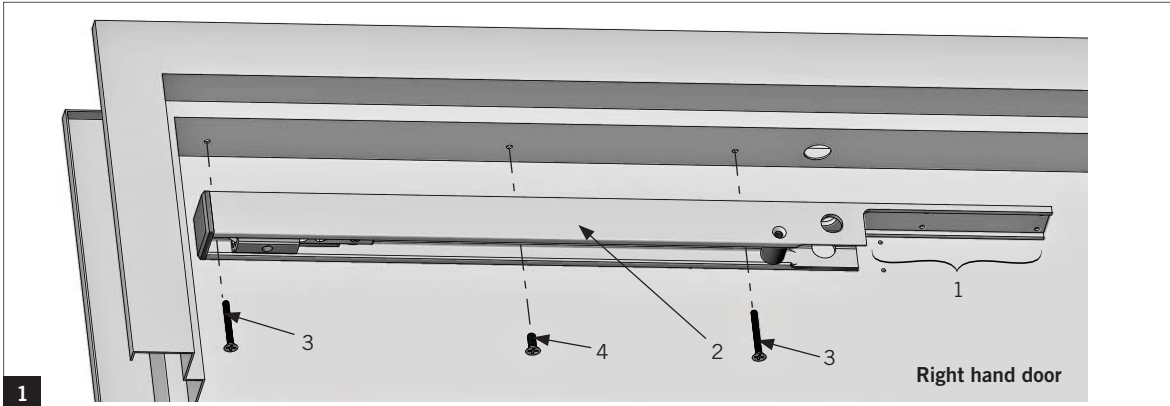
## A. Installing the surface closer: Push side mount (PT)

### Tools recommended

- Drill Bits
  - Metal: No. 21 & 10-32 Tap
  - Wood: 9/64"

- #0 Phillips screwdriver
- #2 Phillips screwdriver
- 3/16" flat head screwdriver
- Jeweler's flat head screwdriver
- M5 Hex key
- 1/2" or 13mm box wrench

### Installing the track, detector, and backplate

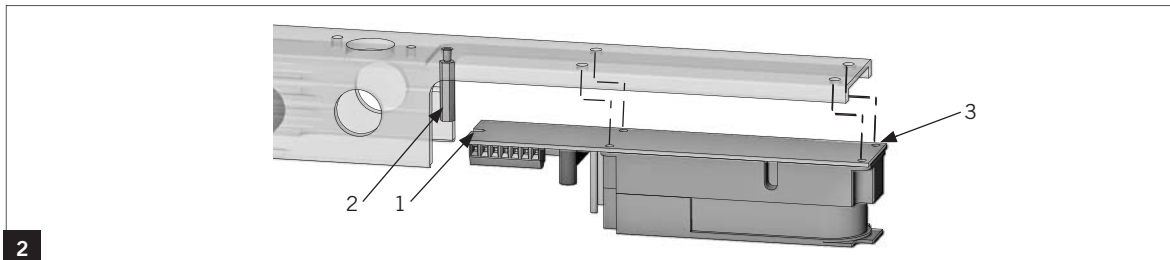


### Reference template 08279513

**NOTE:** For use on soffit mount applications on the push side of the door.

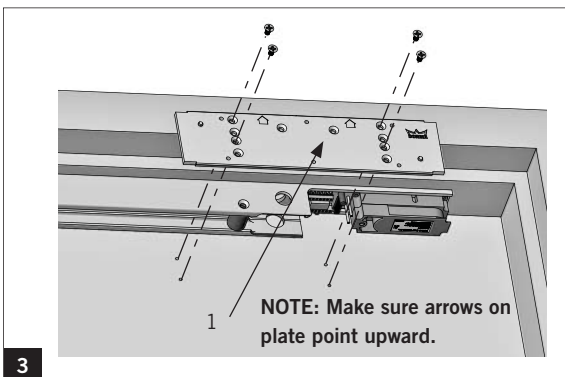
- 1.1 Orient the detector portion of the track (1) towards the hinge.

- 1.2 Attach the track channel (2) to the soffit with two screws [1/4x1-1/4" Phillips flathead screws or No. 14x2" Phillips flathead wood screws] (3) and through the center of the track with one screw [1/4x1-5/8" Phillips flathead screws or No. 14" Phillips flathead wood screws] (4).



- 2.1 Slide the front indent of the detector (1) under the standoff (2), then attach the detector to the track with four screws [4-40x3/16" Phillips pan head screw] (3).

**Note:** If construction is still being completed near the detector installation, **DO NOT** install the detector at this time or protect the detector from construction dust contaminants.

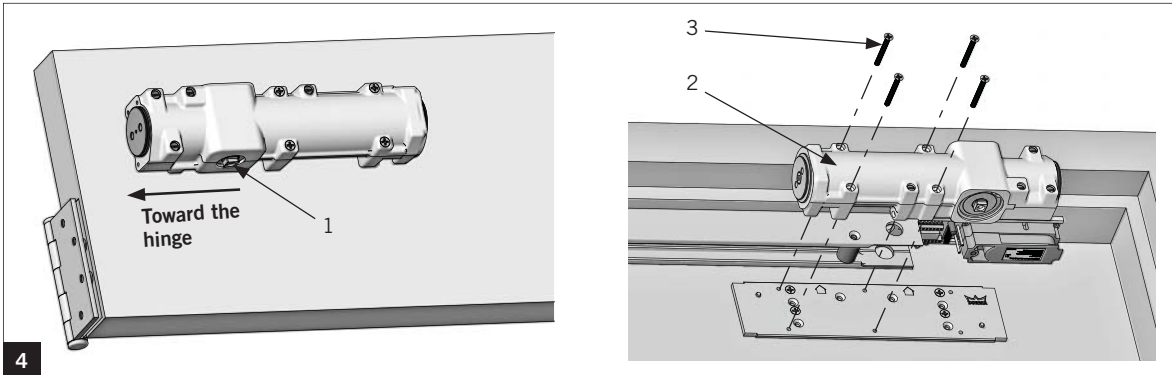


- 3.1 Attach the back plate (1) to the mounting surface using the four screws [10-32x5/8" Phillips flathead screws or #10x1" wood screws] provided with the surface closer, using the 1<sup>st</sup> and 3<sup>rd</sup> holes of the plate.



# TS93 EMR T/PT/TDE

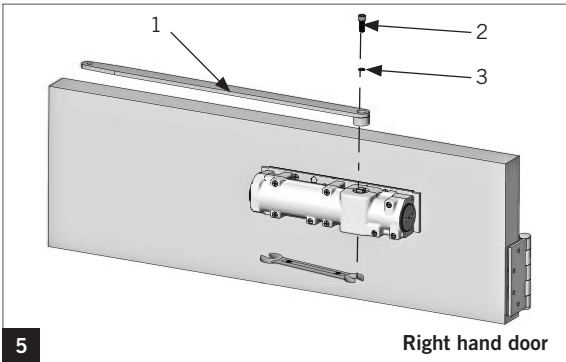
## Installing the surface closer



4

**NOTE:** Orient pinion (1) closest to hinge.

**4.1** Attach the closer body (2) to the plate using the four screws [M5x47mm Phillips flathead screws] (3) provided with the plate itself.



5

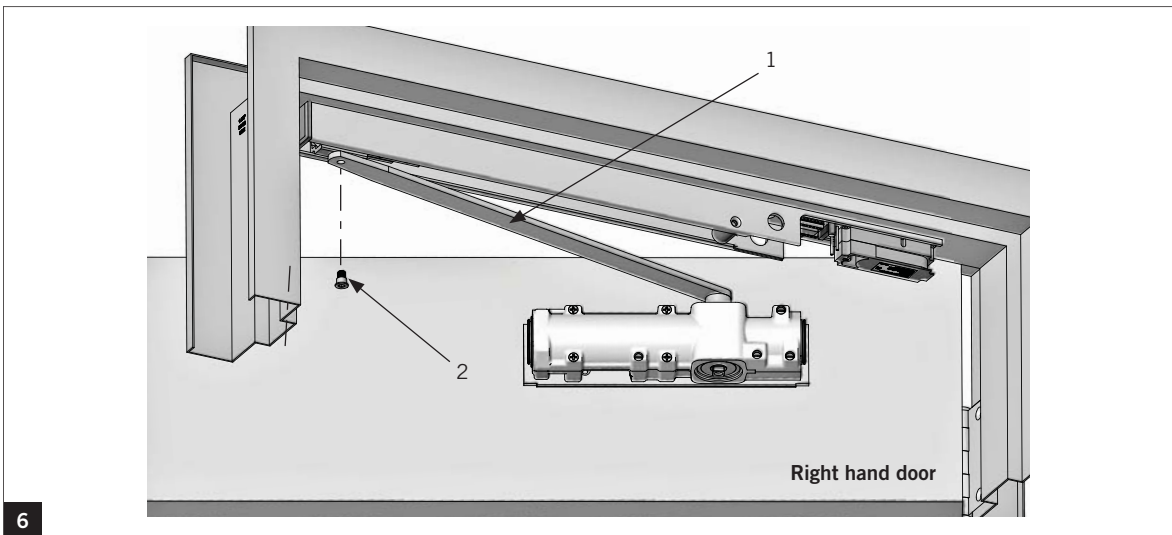
Right hand door

**5.1** Using an adjustable wrench (and looking up at the bottom of the closer):

- Left hand door - turn the bottom pinion counter-clockwise 10° - 15°.
- Right hand door - turn the bottom pinion clockwise 10° - 15°.

**5.2** Attach the main arm (1) to the top pinion with an M6x20 socket head cap screw (2) and one M8 lock washer (3) using an M5 hex key.

**⚠** Be sure the main arm is parallel to the door during application.



6

Right hand door

**6.1** Align the arm (1) with the slide shoe of the track channel.

**6.2** Attach with one shoulder bolt (2) using an M5 hex key.

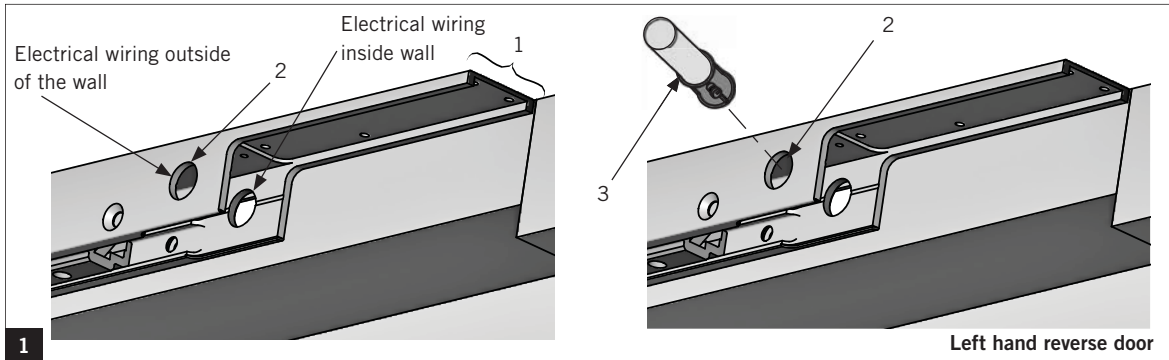
# TS93 EMR T/PT/TDE

## A. Installing the surface closer: Double egress mount (TDE)

### Tools recommended

- Drill Bits
  - Metal: No. 21 & 10-32 Tap
  - Wood: 9/64"
- #0 Phillips screwdriver
- #2 Phillips screwdriver
- 3/16" flat head screwdriver
- Jeweler's flat head screwdriver
- M5 Hex key

### Installing the track, detector, and backplate

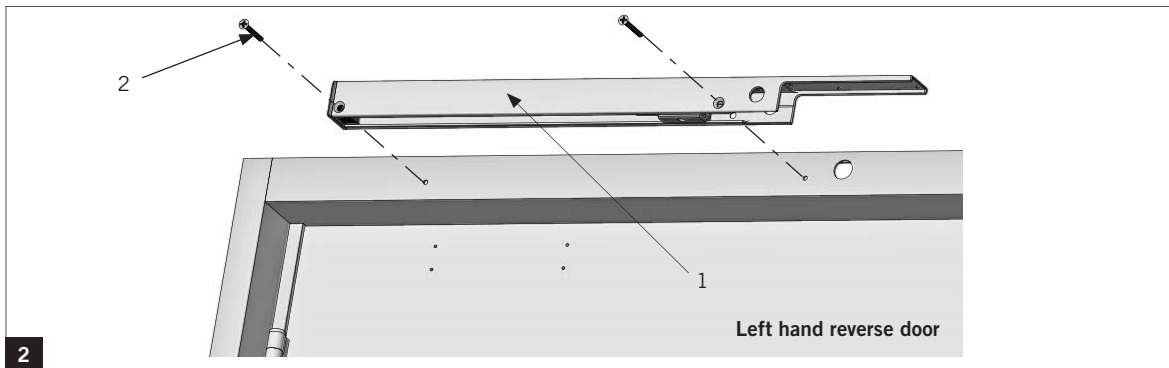


### Reference template 08279514

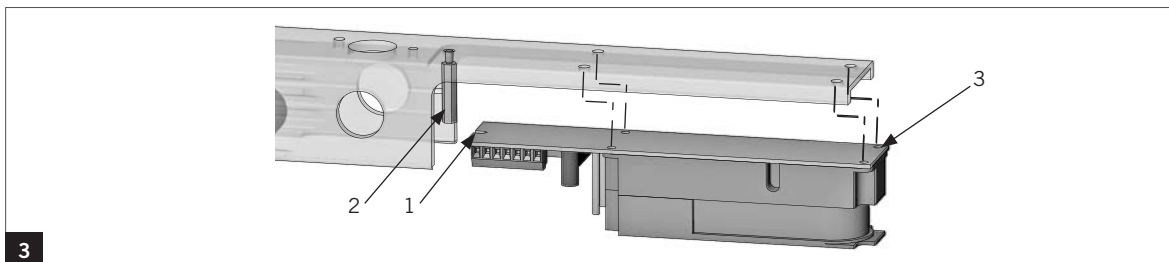
**NOTE:** For use on regular mount applications on the pull side of the door.

- 1.1 Orient the detector portion of the track (1) away from the hinge.
- 1.2 Remove the appropriate wire access plug (2) from the track.

- If removing the frame side wire access plug, ensure it aligns with the wire through hole in the frame.
- 1.3 For wiring applications that are outside of the wall, screw a surface conduit (3) into the exterior wire plug hole.



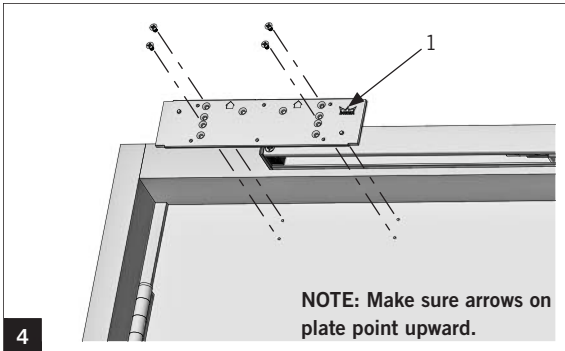
- 2.1 Attach the track channel (1) to the frame through the end blocks with two provided screws [1/4-20x2" Phillips flathead screws or No. 14x2-3/4" Phillips flathead wood screw] (2).



- 3.1 Slide the front indent of the detector (1) under the standoff (2), then attach the detector to the track with four screws [4-40x3/16" Phillips pan head screws] (3).

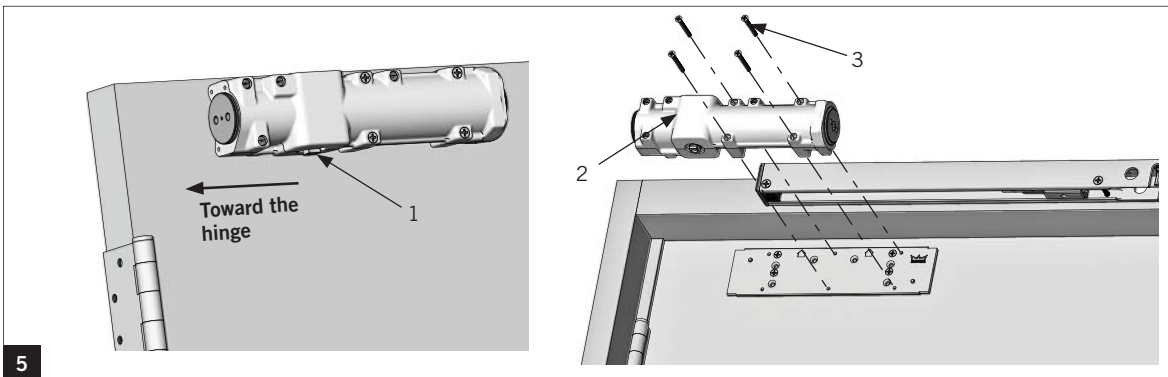
**Note:** If construction is still being completed near the detector installation, **DO NOT** install the detector at this time or protect the detector from construction dust contaminants.

# TS93 EMR T/PT/TDE



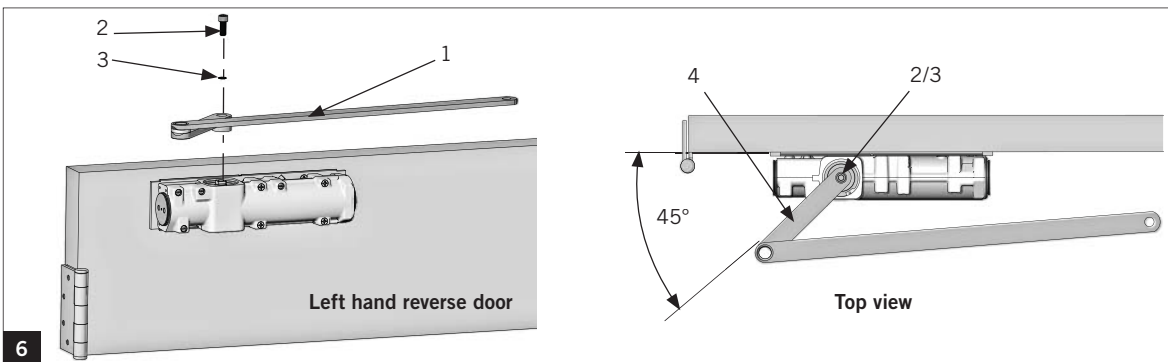
**4.1** Attach the back plate (1) to the mounting surface using the four screws [10-32x5/8" Phillips flathead screws or #10x1" flathead wood screws] provided with the surface closer, using the 1<sup>st</sup> and 3<sup>rd</sup> holes of the plate.

**4** Installing the surface closer



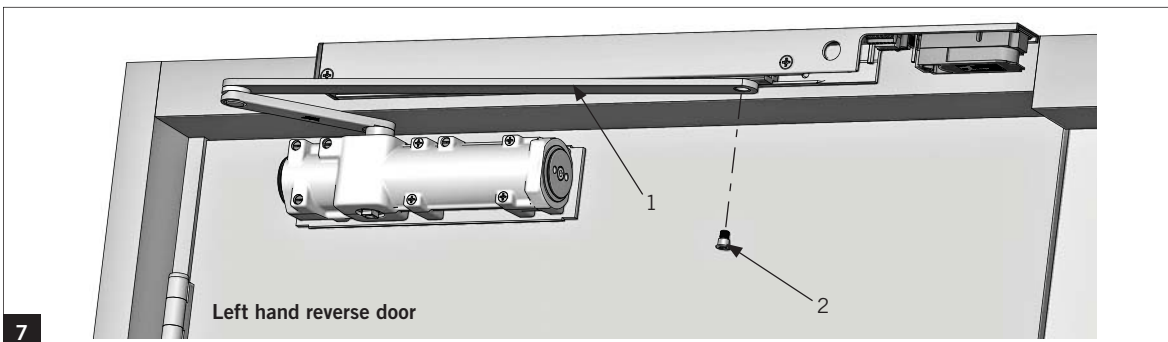
**5** **NOTE:** Orient pinion (1) closest to hinge.

**5.1** Attach the closer body (2) to the plate using the four screws [M5x47mm Phillips flathead screws] (3) provided with the plate itself.



**6.1** Attach the main arm (1) to the top pinion with an M6x20 socket head cap screw (2) and an M8 lock washer (3) using an M5 hex key.

**!** Be sure the smaller portion (4) of the main arm is angled approximately 45° away from the door during application.



**7.1** Align the arm (1) with the slide shoe of the track channel.

**7.2** Attach with one shoulder bolt (2) using an M5 hex key.

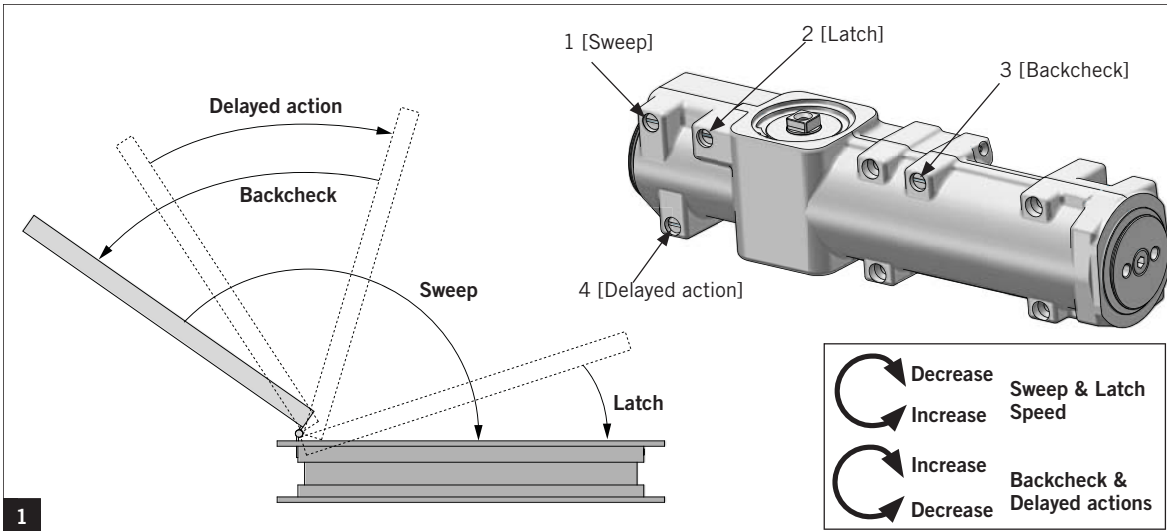
# TS93 EMR T/PT/TDE

## B. Adjustments

- ⚠ Confirm closer spring size prior to making any closing speed adjustments.
- ⚠ Do not back valves out beyond closer casting.

- ⚠ Maximum opening angles are listed on page 2.
- ⚠ Door should close in 3 to 6 seconds from 90°.
- ⚠ Do not close valves completely.

### Adjusting the closing speeds: sweep, latch or backcheck and delayed actions



**1.1** Adjust the **sweep speed** (1) for the area from the maximum open position to 0°. Maximum opening degrees are listed on page 2.

- Increase sweep speed: Turn valve counter-clockwise
- Decrease sweep speed: Turn valve clockwise.

**1.2** Adjust the **latch speed** (2) for the area from 7° - 0°.

- Increase latch speed: Turn valve counter-clockwise

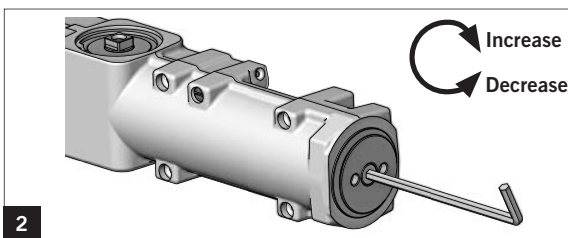
**1.3** Adjust the **backcheck** (3) for the area from 70° to maximum opening.

- Increase resistance: Turn valve clockwise
- Decrease resistance: Turn valve counter-clockwise.

**1.4** Adjust the **delayed action** (4) for the area from 120° to 70°.

- Increase delayed action: Turn valve clockwise
- Decrease delayed action: Turn valve counter-clockwise

### Adjusting the spring force



#### TS9315

**NOTE:** Supplied with a size 3 spring setting.

- Adjust according to chart.

#### TS9356

**NOTE:** Supplied with a size 6 spring setting.

- Adjust only if more spring tension is required to positively close and latch door.

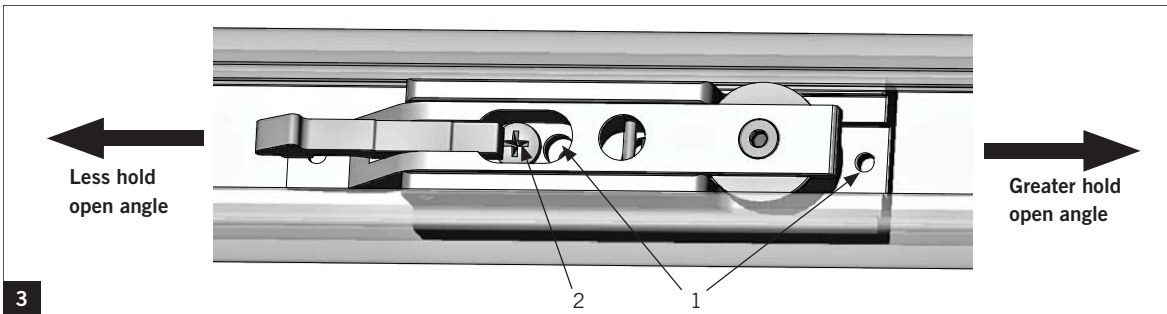
CLOSER TYPE	MAX DOOR WEIGHT (LBS)	SPRING SIZE	FULL TURNS OF SPRING ADJUSTER
TS9315	125	3	+3
	150	4	+9
	200	5	+12
TS9356	250	6	0

DOOR WIDTH		FULL TURNS OF SPRING ADJUSTER	CLOSER SIZE
INT.	EXT.		
3'	2'6"	+3	3
3'6"	3'	+9	4
4'	3'6"	+12	5

**NOTE:** DO NOT ADJUST SPRING LOWER THAN SIZE 3

# TS93 EMR T/PT/TDE

## Adjusting the hold open



**NOTE: Hold open position is preset at approximately 90°.**

- 3.1 Loosen the set screws (1) using a 3/32" hex wrench.
- 3.2 Slide the hold open to the desired position.
- 3.3 Tighten the screws to desired the position.

3.4 Turn the screw (2) with a screw driver to set the force needed to manually disengage the hold open:

- Clockwise = increase force
- Counter clockwise = decrease force

**Note: An auxiliary door stop must be installed to limit the maximum degree of door swing. Failure to do so may result in damage to the unit.**

## C. Electrical setup

### Wiring diagrams

Wire the units according to building and system requirements. Observe all applicable codes.

SD-2

LED & TEST

15  
14  
13  
12  
11  
10  
9  
8

7  
6  
5  
4  
3  
2  
1

**ELECTRICAL SPECIFICATIONS**

Voltage input: 24 VDC +10% - 15%  
24 VAC +10% - 15%

NOTE: 120 Volt applications require optional external transformer.

Maximum input current: @24 VDC- 161 mA (1 solenoid), 310 mA (2 solenoids)  
@24 VAC- 161 mA (1 solenoid), 310 mA (2 solenoids)

NOTE: Excludes accessories

Maximum output to Remote Alarm Indicator Lamp: 300 mA

Contact ratings: Alarm and or accessory contacts - 1.25 A at 24 VDC or .3 A at 120 VAC resistive, maximum.  
Trouble contacts- 500 mA at 24VDC resistive maximum.

**DETECTOR CONNECTION LIST**

FUNCTION	TERMINAL
AC/DC 24V INPUT	3, 14
ALARM CONTACTS (NORMALLY OPEN)	1, 2
SOLENOID	6, 9
REMOTE ALARM INDICATOR LAMP +	8
REMOTE ALARM INDICATOR LAMP -	7
INTERCONNECT +	15
INTERCONNECT -	4
TROUBLE CONTACTS (NORMALLY CLOSED)	5, 13
24 VDC OUTPUT (UNFILTERED) +	10

IF JUMPER WIRE J11/J12 IS CUT, TERMINALS 8, 9 AND 10 ARE CHANGED TO FORM C RELAY CONTACTS, RAIL OUTPUT IS LOST, AND HOLD OPEN SOLENOIDS MUST BE POWERED FROM A SEPARATE SOURCE. CONSULT FACTORY IF REMOTE DETECTORS ARE USED IN THIS APPLICATION.

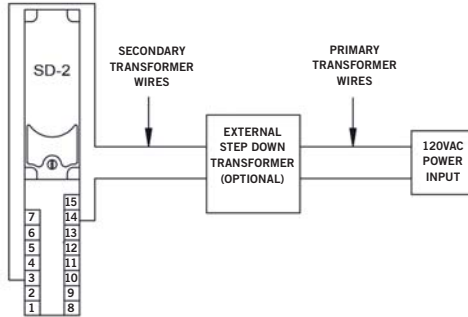
COM 10  
N.C. 9  
N.O. 8

# TS93 EMR T/PT/TDE

**POWER SUPPLY** Insulate all connections. Observe all local codes.

## 120 VAC, 50/60 HZ

120 VAC, 50/60 HZ: Connect the 120 VAC incoming voltage wires to the primary wires of the transformer. Connect the secondary transformer wires to terminals #3 and #14 of the detector module. This connection is not polarity dependent.

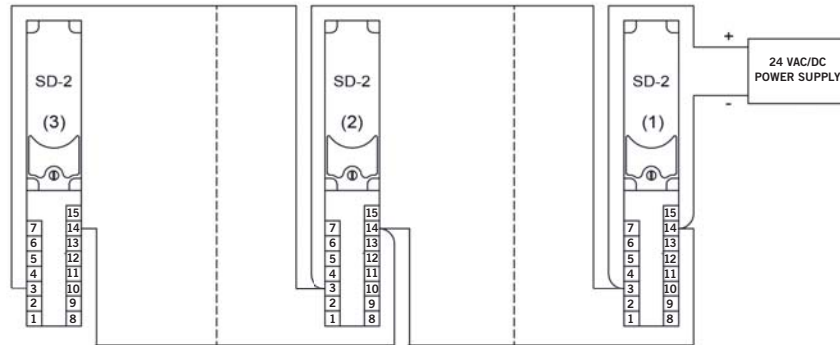


**NOTE:**  
FOR ULC INSTALLATIONS,  
TRANSFORMER MUST INSTALL  
IN 4" X 4" ELECTRICAL BOX X 3"  
DEEP MINIMUM.

2

## 24V AC/DC

24V AC/DC NOTE: The step down transformer is not used in this connection. Connect 24V AC/DC power to terminals #3 and #14 on the detectors. These connections are not polarity dependent. If the unit is connected to a second unit, connect terminal #3 of the first unit to terminal #3 of the second unit and connect terminal #14 of the first unit to terminal #14 of the second unit. Continue this process for any subsequent units to be powered from the same power supply.

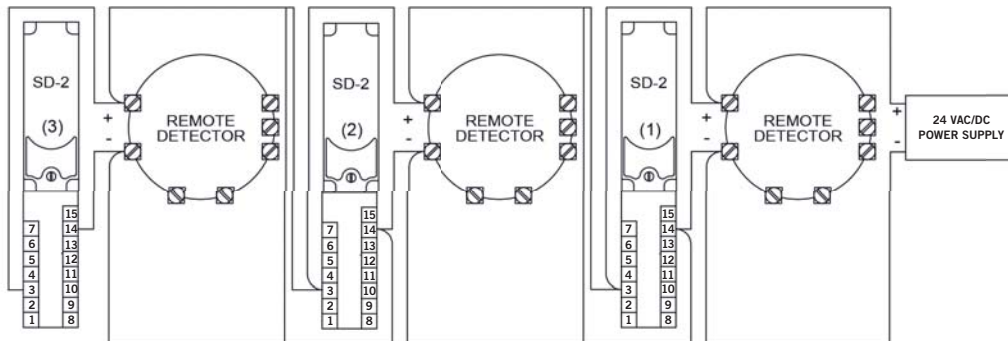


3

## 24V AC/DC WITH REMOTE DETECTORS

24V AC/DC WITH REMOTE DETECTORS NOTE: The step down transformer is not used in this connection. Perform wiring connections as illustrated below. Additional units are wired in the same manner as unit #2. Installations using a combination of SD-2 modules with and without remote area detectors can be wired accordingly by substituting the wiring diagram section from unit #1, #2, or #3 in step #3 above instead of unit #1, #2, or #3 below with remote detector. The vertical dashed lines indicate where one diagram would be exchanged for another.

NOTE: Input voltage must match detector voltage.

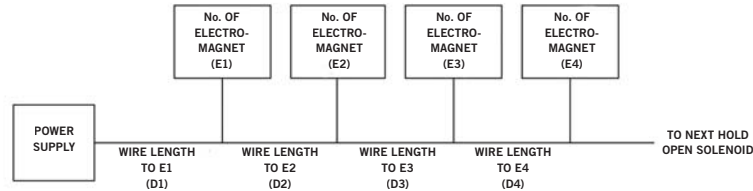


4

# TS93 EMR T/PT/TDE

## WIRE GAUGE

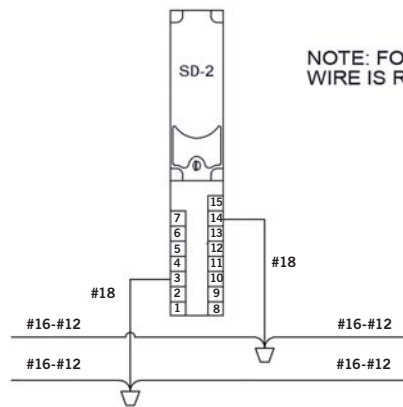
**WIRE GAUGE:** The maximum wire gauge for wiring the SD-2 detector module is #18 AWG. The method for determining wire gauge is given below. **NOTE:** A minimum of 20.4 VDC must be supplied to each solenoid in the run.



E1, E2, E3 etc. are the number of electromagnets at each subsequent station. D1 is the distance from the power supply to the first electromagnet station. D2, D3, D4 etc. are the distances from the previous electromagnet station to the next electromagnet station in the run. To determine the correct wire gauge multiply E1 times D1. Add that quantity to E2 times D2. Repeat the same procedure for each electromagnet to test the last unit in the run. Compare the quantity calculated to the chart below. The calculated value must be less than or equal to the value corresponding to the appropriate wire gauge.

10 GAUGE-11,788 12 GAUGE-7,407 14 GAUGE-4,669 16 GAUGE-2,997 18 GAUGE-1,843

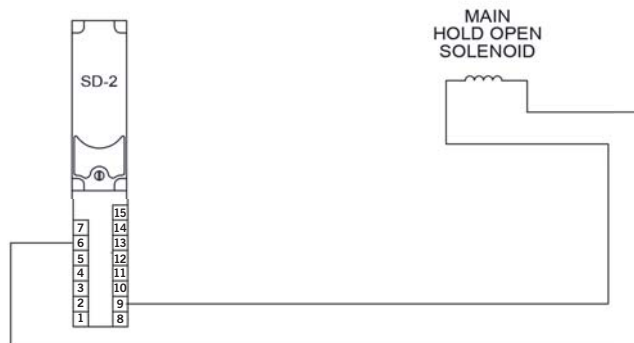
The procedure described above can be expressed in the following equation:  $(E1 \times D1) + (E2 \times D2) + (E3 \times D3) \dots (En \times Dn)$  The above values correspond to the wire gauge to be used. If the calculated value is 1,843 #18 AWG wire can be run and connected directly to the detector module. If the calculated value exceeds 1,843 larger wiring will be required. Since the detector will only accept #18 AWG wire, a wiring splice will be necessary as illustrated below.



5

## SD-2 DETECTOR TO MAIN SOLENOID CONNECTION

Strip approximately 1/4" of plastic insulation from the end of the two solenoid wires supplied. Connect one end each of the solenoid wires to terminals 6 & 9 of the SD-2 detector as shown.



6

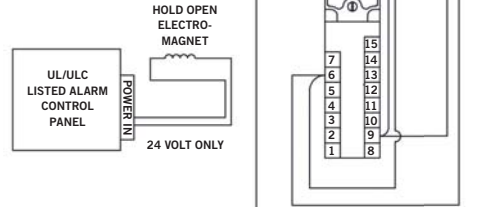
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## SD-2 DETECTOR TO AUXILIARY SOLENOID CONNECTION

NOTE: Make this connection the same time as the main hold open solenoid connection. Strip approximately 1/4" of plastic insulation from the ends of the wires. Connect auxiliary hold open solenoid wires to 9&6 of SD-2 detector.

## SOLENOID ATTACHMENT TO UL/ULC LISTED ALARM CONTROL PANEL

Some applications may require input power to the hold open electromagnet to be supplied through a UL/ULC listed alarm control panel so the hold open electromagnet functions separately from the internal detector module. This application requires the alarm contacts of the SD-2 detector and any remote detectors to be connected to the alarm contacts of the control panel. An alarm indication to the panel results in the loss of power to the hold open electromagnets in the related zone, which allows the doors to close. Wire main electromagnet to alarm control panel as illustrated.

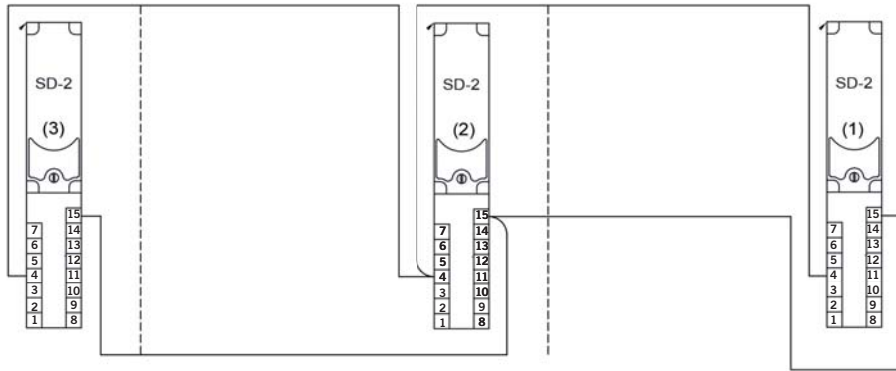


7

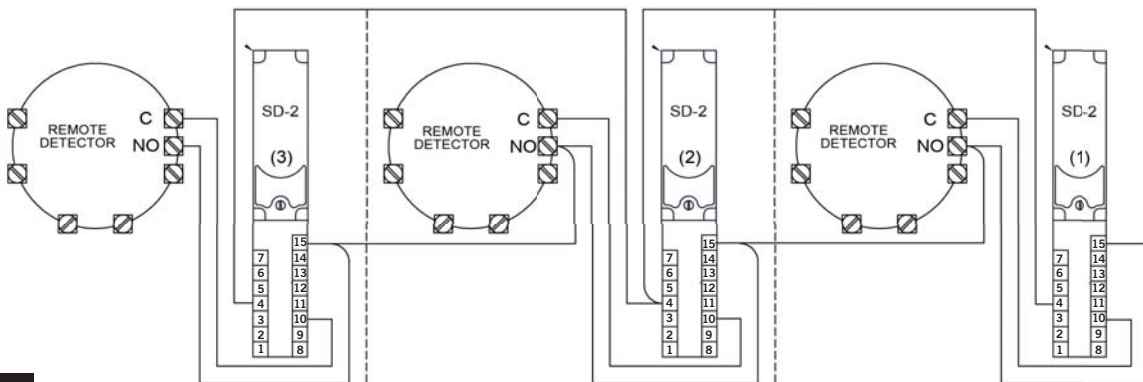
## SD-2 DETECTOR INTERCONNECTION

1. Up to (5) SD-2 detectors, with or without connection to an auxiliary unit or remote area detector may be interconnected. This limitation applies only to interconnected units and assumes a power supply large enough to handle this load if the power supply is common to all units interconnected. Separate power supplies may be used for each SD-2 detector while permitting the units to be interconnected.

2a. For units without connection to remote detectors, connect terminal #15 (+) between the units to be interconnected. Connect terminal #4 (-) between the units to provide a common for the interconnection. Additional units are wired in the same manner as unit #2 but no more than five (5) units can be interconnected.



2b. For units used in conjunction with remote area detectors, complete wiring connections as illustrated below. Heed caution note in SD-2 DETECTOR TO REMOTE AREA DETECTOR section of instruction sheet. Additional units are wired in the same manner as unit #2 but no more than five (5) units can be interconnected. Installations using a combination of SD-2 detector modules with or without remote area detectors can be wired accordingly by substituting the wiring diagram from unit 1, 2, or 3 in step 2a. above for unit 1, 2, or 3 below. The vertical dashed lines indicate where one (1) diagram would be exchanged for another.



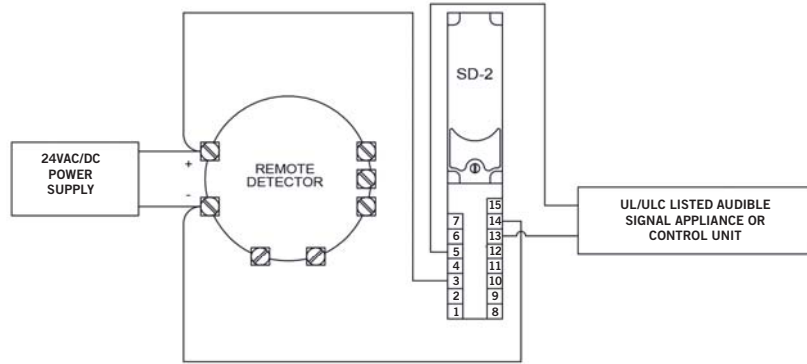
8



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## SD-2 DETECTOR TO REMOTE AREA DETECTOR

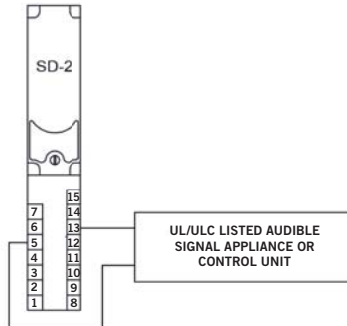
CAUTION: A remote open area detector can only be connected to a unit whose trouble relay contacts (#5 & #13) are connected in a circuit for the purpose of obtaining an audible trouble signal in the event of a circuit fault. In the event that the unit is used for releasing service only, the trouble contacts are connected to the trouble circuit of a UL/ULC listed alarm control panel. This condition is satisfied by the four (4) and six (6) wire supervisory connections in the alarm initiation wiring section. Perform wiring connections as illustrated below. NOTE: The SD-2 is wired as the E.O.L. (end of line) device for the remote detector. Therefore, it must act as the last item in the loop.



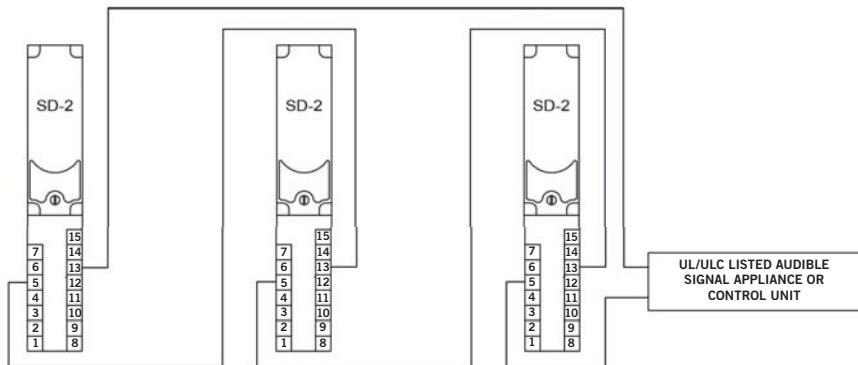
9

## SD-2 DETECTOR TO AUDIBLE SIGNAL APPLIANCE

1. Connect terminals #5 & #13 of a singular unit directly to a UL/ULC listed audible signal appliance or alarm control panel.



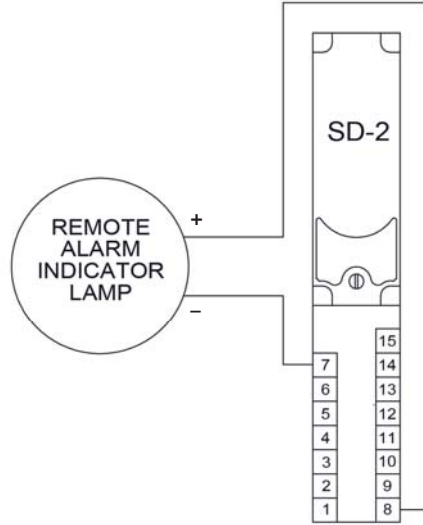
2. Installations with multiple units in a run must be connected to a UL/ULC listed audible signal appliance or alarm control panel as illustrated below.



10

## SD-2 DETECTOR TO REMOTE ALARM INDICATOR LAMP

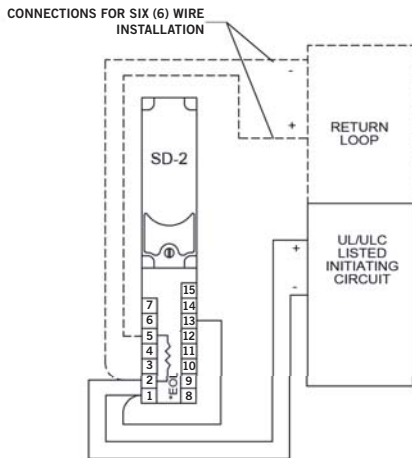
Connect the positive wire of the remote alarm indicator lamp to terminal #8 of the detector module.  
Connect the negative terminal of the indicator lamp to terminal #7 of the SD-2 detector.



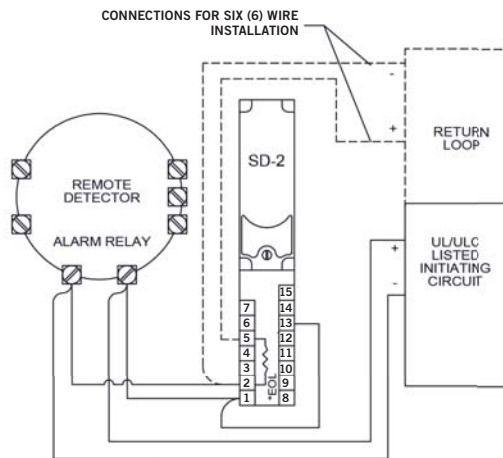
11

## ALARM INITIATION WIRING (4 WIRE CLASS B & 6 WIRE CLASS A)

1. Make all connections as outlined previously for all units required by the job specifications.
2. Make all signal initiating connections as illustrated in the appropriate figure below. Note wiring differences for units with remote detectors vs. units without remote detectors. Dashed lines to return loop represent wires required for six (6) wire applications. These wires are omitted in four (4) wire applications.
3. Connections to only one (1) SD-2 are shown below.



\*EOL USED IN 4 WIRE APPLICATIONS ONLY



\*EOL USED IN 4 WIRE APPLICATIONS ONLY

12A

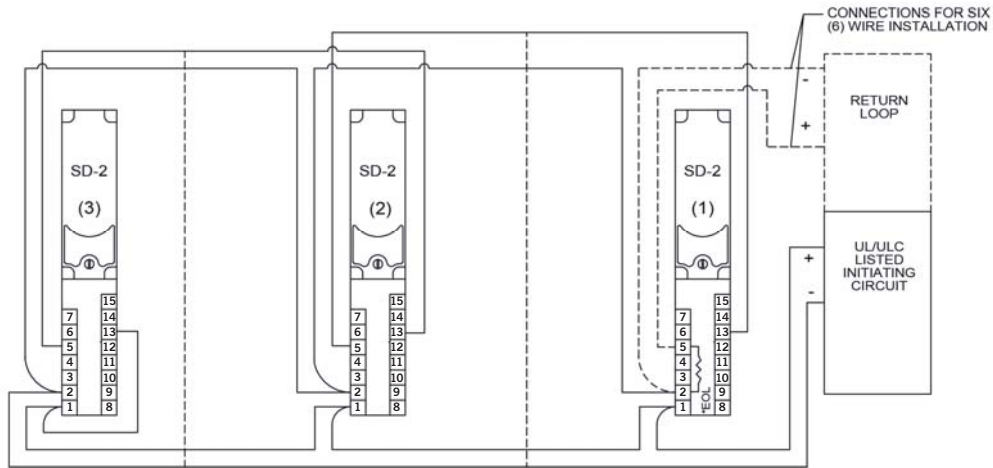
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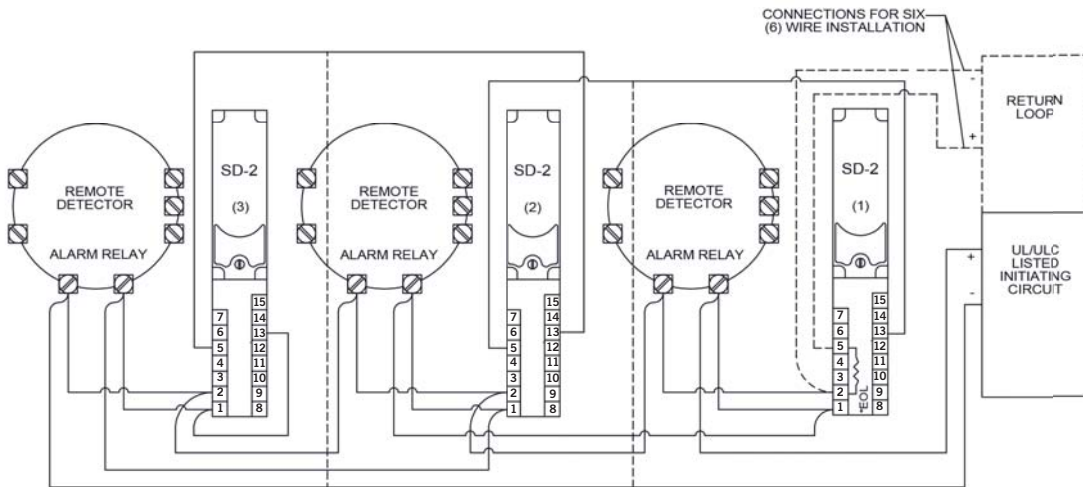
## ALARM INITIATION WIRING CONT.

4. Connections for two (2) SD-2 detectors would consist of detector (1) in figure below connected to detector (3) in the same manner as it is shown connected to detector (2). Detector (2) would be deleted.

5. More than three (3) SD-2 detectors are connected by inserting additional units with connections as shown for unit 2. The last unit in the run must be connected in the same manner as unit 3.



\*EOL USED IN 4 WIRE APPLICATIONS ONLY



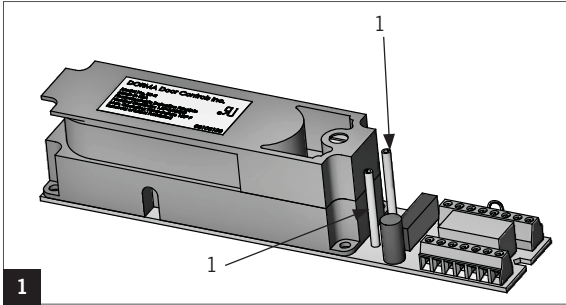
\*EOL USED IN 4 WIRE APPLICATIONS ONLY

6. In four (4) wire installations, it is the responsibility of the installer to supply and connect the E.O.L. resistor specified by the fire alarm control panel used. The E.O.L. resistor is only installed in the first unit of the run as illustrated.

12B

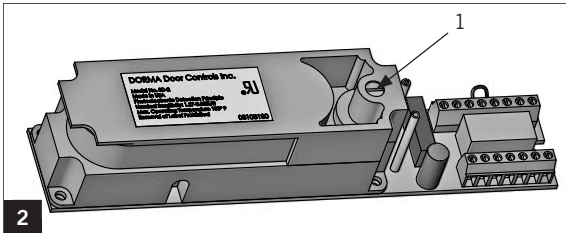
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## Final installation and tests



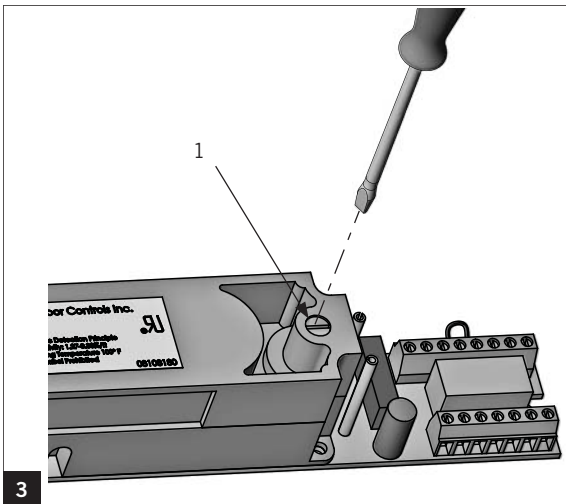
### SD-2 Detector sensitivity test (ULC requirement only)

- 1.1 Apply power to the detector.
- 1.2 Connect a voltage meter to the two test terminals (1).
- 1.3 The normal range is between 1.27Vdc - 3.38Vdc.



### Check all the wiring and connections

- 2.1 The LED (1) should blink every 7 - 10 seconds.
- 2.2 If not, verify the wiring of the device.



### Test the hold open unlatching function

- 3.1 Open the door so the slide shoe engages the hold open mechanism.

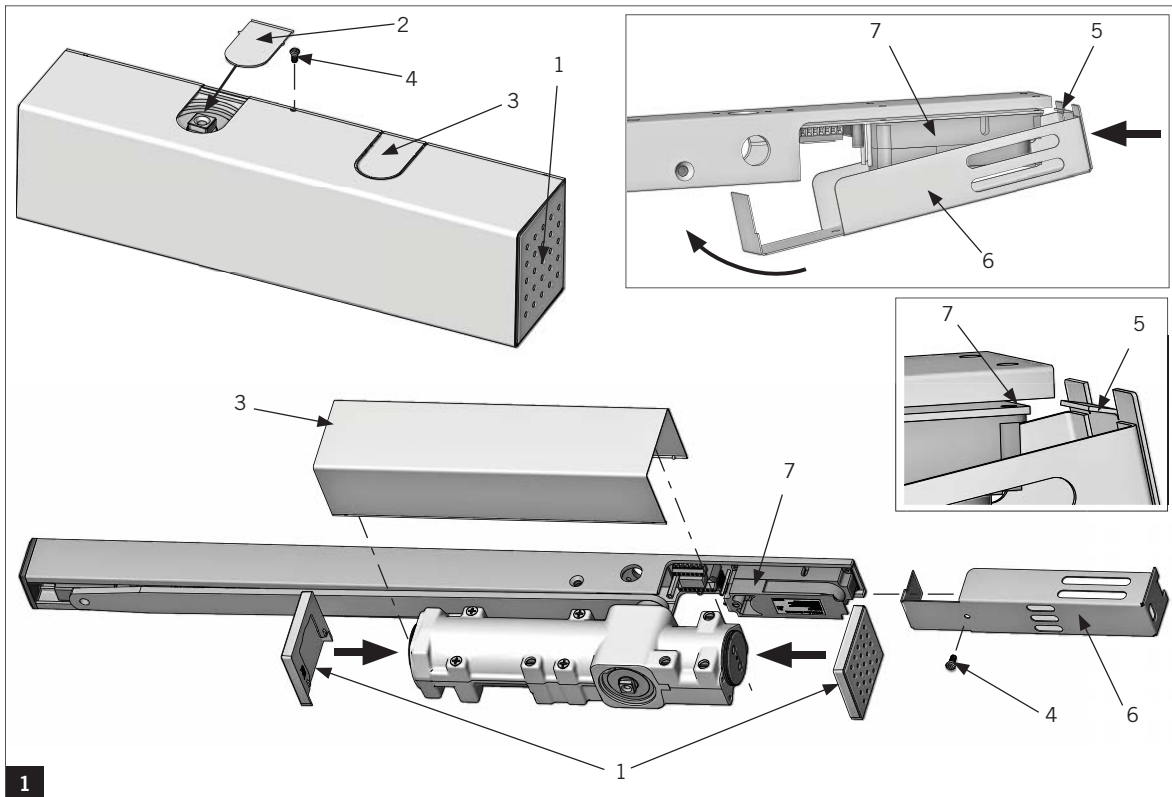
### Test the detector

- 3.2 Insert a small screwdriver into the light pipe (1) and turn counter-clockwise. Hold for 10 seconds.
- 3.3 The LED will turn red and the door will close.
- 3.4 Turn the light pipe clockwise back to the original position to reset the detector.
- 3.5 The LED will turn off and then begin to blink as described in **step 2**.

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## D. Final setup

### Installing the covers



**1.1** Snap both end covers (1) into place.

**1.2** Remove the un-needed tab (2), and snap the closer body cover (3) into place.

**1.3** Attach with a 4-40 Phillips pan head screw (4) .

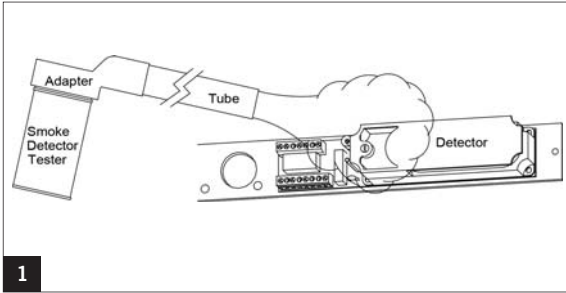
**1.4** Slide the tab (5) of the detector cover (6) under the end of the detector (7) and swing it into position.

**1.5** Secure the detector cover with one 4-40x3/16" Phillips flathead screw.

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## Smoke detector testing

⚠ Aerosol testing is a "go - no go" test and is not an acceptable means to test smoke detector sensitivity.



⚠ If the local air velocities exceed 100 ft/min, the detector may not alarm on the first try.

1.1 Aim the Smoke Detector Tester tube at the detector and release a burst of aerosol in 1 second bursts.

**Note:** The detector may take up to 20 seconds to respond.

1.2 If the detector does not alarm and is in a high air velocity area, spray up to five bursts in 5 to 10 second intervals.

1.3 If the detector still does not alarm after five repeated aerosol sprays, a higher smoke volume may be needed.

DORMA accepts the use of Home Safeguard Smoke Detector Tester (Models 1H and 25S) if, and only if, it is used:

- 1 With the Model 1490 accessory.
- 2 With the new formula as identified by a date code, located on the bottom of the can, of 1990 or later.
- 3 In accordance with the instructions stated above

If the preceding requirements are not met, the use of the Smoke Detector Tester is unacceptable and DORMA cannot guarantee the proper operation of detectors that have been subject to this product.

⚠ Other acceptable methods of aerosol or smoke generation:

- 1 Gemini 501 Smoke Generator Machine (set to 4%/ft to 5%/ft obscuration as described in the Gemini 501 Manual)
- 2 Burning paper or fabric in a metal can (useful for application in high air velocity locations)
- 3 Burning cigarettes, punk, or cotton wick (commonly available materials)



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